

WILKES, ARTIS, HEDRICK & LANE

CABLE ADDRESS: WILAN
FAX: 202-457-7814

CHARTERED
ATTORNEYS AT LAW
SUITE 1100

ANNAPOLIS, MARYLAND
BETHESDA, MARYLAND
FAIRFAX, VIRGINIA
GREENBELT, MARYLAND
WALDORF, MARYLAND

WRITER'S DIRECT DIAL

1886 K STREET, N. W.
WASHINGTON, D. C. 20006-2897

(202) 457-7345

(202) 457-7800

March 24, 1997

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
Room 222
1919 M Street, N.W.
Washington, D.C. 20554

Re: Usage of the Public Switched Network by
Information Service and Internet Access Providers,
CC Docket No. 96-263

Dear Mr. Caton:

On behalf of the United States Internet Providers Association ("USIPA"), please find enclosed an original and sixteen (16) copies of its comments in the above-captioned proceeding. In addition, enclosed please find a 3.5" diskette containing the comments. USIPA will also be filing the comments electronically via e-mail to isp@fcc.gov.

If you have any questions, please contact the undersigned counsel at (202) 457-7345, or e-mail to rgeist@wahl.com.

Respectfully submitted,

WILKES, ARTIS, HEDRICK & LANE
Chartered

By: *Rudolph J. Geist*

Ramsey L. Woodworth
Robert M. Gurss
Rudolph J. Geist

Attorneys for the United
States Internet Providers
Association

Enclosures

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Common Carrier Bureau

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In the Matter of)
Usage of the Public Switched)
Network by Information Service)
and Internet Access Providers)

COMMENTS OF THE UNITED STATES INTERNET PROVIDERS
ASSOCIATION

Respectfully Submitted,

UNITED STATES INTERNET
PROVIDERS ASSOCIATION

By:

Ramsey L. Woodworth

Robert M. Gurss

Rudolph J. Geist

Wilkes, Artis, Hedrick & Lane,
Chartered
1666 K Street, N.W., #1100
Washington, D.C. 20006
(202) 457-7345
Its Attorneys

March 24, 1997

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SUMMARY

The United States Internet Providers Association ("USIPA") applauds the Commission's interest in obtaining information regarding the current state of technology, telecommunications infrastructure development, and the evolution of the Internet service provider ("ISP") industry. While the Commission should be aware of the current state of the still-evolving ISP industry, USIPA believes that there is no need at this time for substantial government regulatory involvement.

Due to technological capabilities and rapidly growing demand for services, the growth of the ISP industry has exploded over the past two years. There is substantial competition among the over 3,600 ISPs nationwide in an emerging competitive telecommunications marketplace. The nature and type of services offered are changing daily. The explosion of the ISP industry and the Internet is resulting in significant new economic opportunities for businesses and a new mass communications medium for consumers.

At this time, Internet service providers rely heavily on the incumbent local exchange carriers ("ILECs") to provide communications services. In the vast majority of cases, ISPs currently purchase tariffed local telecommunications network services from ILECs. As these

services can be costly and limited in their ability to deliver the technologically advanced communications capabilities ISPs have to offer, USIPA looks forward to the development of a fully competitive marketplace for telecommunications services envisioned by the Telecommunications Act of 1996.

The current lack of competition in the nation's local telecommunications markets stands as a barrier to further development of Internet services and the ISP industry. In order to ensure the development of the local telecommunications infrastructure for the delivery of advanced Internet services, the Commission should quickly and effectively implement the provisions in the Telecommunications Act of 1996 opening up the local market to competition. By doing so, the Commission will guarantee that free market forces will shape future telecommunications services, including the provision of Internet services.

The Commission must also ensure that ISPs receive equal opportunities under the Universal Service Rules to provide advanced telecommunications services to the nation's schools and libraries. Specifically, the Commission should mandate that facilities-based carriers offer services to ISPs for the provision of telecommunications services to schools and libraries, on the same basis as available to the facilities-based carrier.

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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| In the Matter of |) | |
| Usage of the Public Switched |) | CC Docket No. 96-263 |
| Network by Information Service |) | |
| and Internet Access Providers |) | |

**COMMENTS OF THE UNITED STATES INTERNET PROVIDERS
ASSOCIATION**

The United States Internet Providers Association ("USIPA") respectfully submits the following comments in response to the Commission's Notice of Inquiry ("NOI"), FCC 96-488 (released December 24, 1996) in the above-captioned proceeding.

I. Introduction

USIPA represents the interests of the Internet service provider ("ISP") industry, made up of over 3,600 competitive Internet service providers in the United States. USIPA's membership is open to all ISPs, including both national backbone Internet service providers ("NSPs"), and national, regional and local ISPs, that utilize our nation's telecommunications carriers to provide Internet interconnectivity and access services. USIPA seeks to promote the rapid deployment of advanced Internet services to all segments of the public through the advocacy and

development of policies that will provide for the fair representation of the ISP industry within the overall telecommunications landscape.

In the NOI, the Commission is seeking information on technology and policy issues relating to the existing telecommunications infrastructure utilized by ISPs and the future development of Internet services. USIPA commends the Commission's interest in gathering this information. The Commission's desire to learn more about this new medium is not surprising considering its incredible development over the past two years.

In these comments, USIPA has attempted to provide some of the information the Commission seeks. However, it is only a snapshot of this rapidly evolving industry. Because USIPA understands how rapidly the Internet industry is changing, it is committed to regularly providing the Commission with information on the state of the ISP industry. Thus, USIPA will file reports with the Commission on the state of the ISP industry every six months after the date of these comments. It is USIPA's hope that these reports will help the Commission to make good policy decisions regarding the nation's Internet service providers.

In submitting the following comments, USIPA stresses that there is no current need for regulation by the Commission of any Internet services. At this point in time, the Internet industry is in an early stage of development,

and any government interference with the current atmosphere of free market forces could hamper that development.

II. The Current State of the ISP Industry

While the Internet industry is still in its infancy, it has already become one of the most desired new mass communications mediums of the United States. Since the deregulation of the government-controlled National Science Foundation Internet backbone on May 30, 1995, growth in the United States of Internet access services, World-Wide Web usage, and the number of U.S. Internet hosts has exploded. All expectations are that Internet services will grow even more rapidly in the future. Estimates of the number of households that purchase Internet access services in the United States today ranges from about 11%-15%, and the number of individuals using the Internet ranges from 15 million to over 40 million.¹ Growth of the Internet is resulting in a new Internet commerce which is projected to generate billions of dollars per year spent in advertising on-line and tens of billions of dollars per year in on-line sales by the year 2000.² No doubt, as one of the fastest growing communications media in the world, the Internet will

¹ See "Off the Charts: The Internet 1996," Internet World Magazine, December 1996, at 48-51.

² Id.

be a driving force behind economic growth in the United States into the 21st Century.

Internet related services are quickly becoming a desired medium for many businesses and a large portion of the mass consumer market, changing the way we live, interact and do business. The Internet is evolving into the fastest, most efficient, and most complete true global medium that will enable people in nations stretching every corner of the globe to interact in ways never before imagined.

The medium has become attractive because of the substantial communications opportunities provided at a reasonable cost. Unlimited access to the Internet can be had for as little as \$9 or \$10 per month from some Internet Service Providers. A typical flat-rate cost for a dial-up account is about \$19.95. In addition, numerous businesses have created a Web presence on computer servers connected to the Internet backbone often for only a small percentage of their overall advertising budget. The Internet is quickly creating new opportunities for entrepreneurs and others to create new technologies and services, which contribute substantially to the technological sector of our economy.

The Internet is driving the computer industry to create faster, smaller, and cheaper computer processors capable of handling greater quantities of information, and to produce them in shorter time frames than ever before. In addition, manufacturers of software and other equipment used by ISPs

and their subscribers have been bringing new technologies and products to the market at lightning speeds. Never before in history have we witnessed such aggressive and rapid deployment of new technology than with respect to the Internet.³

Central to the successful build-out of this budding industry has been the absence of government intervention. The Commission recognized the necessity of a hands-off approach for enhanced service providers ("ESPs") (as ISPs are currently classified) as early as 1983 in the first Access Charges Proceeding. In a Memorandum Opinion and Order ("MO&O") therein, the Commission found no need or reason to impose access charges designed solely for application to providers of interstate voice telecommunications services, on ESPs.⁴ Rather, the Commission decided to classify ESPs as end users subject to intrastate tariffed rates because of their fundamentally different position in the telecommunications industry, and a concern that any additional costs imposed on ESPs could harm

³ A prime example of this rapid deployment of technology is that of analog modem technology. To overcome the 60 year old local switched telephone model, modem chipset technology manufacturers such as U.S. Robotics, Inc. and Rockwell International, Inc. have worked feverishly to deploy faster modem speeds over plain old telephone service lines ("POTS"). Currently, typical modem speeds range up to about 33 Kbps over those lines. However, U.S. Robotics (with Rockwell not far behind) has begun deploying modems with 56 Kbps technology which will permit an end user to download information from the Internet at speeds up to the full capacity of a POTS line, or 56 Kbps.

⁴ MTS and WATS Market Structure, Memorandum Opinion and Order, 97 FCC 2d 682, 715 (1983) ("Access Charges Order").

their viability.⁵ This decision is as valid today as it was in 1983.

III. Typical ISP Telecommunications Configurations

Today, the Internet infrastructure is comprised of a multitude of different service providers and other entities. A typical non-facilities-based Internet service provider contracts with both facilities-based incumbent local exchange carriers ("ILECs"),⁶ competitive access providers ("CAPs"),⁷ and interexchange carriers ("IXCs") to furnish the necessary telecommunications infrastructure for providing dial-up Internet access service to its customers. Typically, an ISP network will take one (or a combination of more than one) of the following three basic topologies.

The most common topology is to simply order flat-rate intrastate tariffed lines from an ILEC. These lines are usually channelized digital T1s, containing 24 individual 56 Kbps circuits, which enables 24 ISP customers to simultaneously be connected to the equipment at the ISP's

⁵ Id.

⁶ A non-facilities-based ISP is one which has not constructed any local exchange telecommunications facilities, and therefore leases the facilities required to reach its end user customers from facilities-based incumbent local exchange carriers or competitive facilities-based local exchange carriers.

⁷ For purposes of these comments CAP will refer to any competitor of an ILEC including competitive local exchange carriers, resellers, etc.

point of presence ("POP").⁸ A number of ISPs also utilize Integrated Services Digital Network ("ISDN") services, which are provided in much the same manner as regular flat-rate dial-up service, utilizing either Primary Rate Interface (23B+D) ("PRI") ISDN, or Basic Rate Interface (2B+D) ("BRI") ISDN connections from the ISP POP to the ILEC. The tariffed monthly recurring ("MR") rate charged by the ILEC for either a zero mile 24 channel digital T1 line or zero mile 23 channel PRI ISDN line normally ranges from about \$400 in non-urban areas to upwards of \$800-\$900 in urban areas such as New York City. Typical tariffed up-front non-recurring ("NR") installation charges for these circuits range from about \$1000-\$1500 per 24 channel T1 or 23 channel PRI ISDN.

The flat-rate intrastate tariffed pricing topology is feasible only if the ISP has a POP in the particular telephone rate center. Most rate centers in the United States are limited in terms of both population coverage and geographic area, except around some of the larger metropolitan areas. Thus, for every rate center in which an ISP desires to implement this network topology, it must construct a POP to serve that calling area. Constructing a

⁸ According to a recent Boardwatch Magazine survey of 3,640 ISPs in the United States, over half currently have a digital connection to the LEC CO, the vast majority of those utilizing channelized T1 (72%), with a number using PRI ISDN (47%) and BRI ISDN (50.4%) as well. See "56 K Modems: The Battle Continues," Boardwatch Magazine, March, 1997, at 71. Those not using digital T1 lines typically utilize individual business lines which are answered at the ISP POP by stand-alone analog modems. A good guess is that these ISPs only provide service to a small calling center, and a small customer base.

POP requires leasing office space, installing equipment ranging in price from \$50,000-\$250,000⁹, and purchasing the dedicated access facilities necessary to allow the equipment at the POP to communicate with the ISP's central servers.

At the ISP POP, the ISP's remote access equipment answers local calls, and communicates with the ISP's computer servers to authenticate the customer's password, and serve e-mail and/or news to the customer. In some cases, these functions are all performed on the local rate center level where the authentication, e-mail and news servers are co-located with the remote access equipment. However, in most cases, the servers are not co-located at the ISP local POP, and dedicated bandwidth is utilized by the ISP to permit the remote access equipment answering the local calls to communicate with the servers at distant ISP offices. Once authenticated by the ISP server, any customer requests for access to the Internet are directed from the remote access equipment to the ISP's router and onto the Internet via a digital dedicated access backbone connection provided by a backbone service provider. Most backbone Internet providers have peering agreements to connect at one

⁹ The amount and capacity of equipment that must be installed depends on the anticipated customer demand in a particular area. For example, an ISP would likely invest at least \$200,000 in up-front equipment costs in order to implement a POP near a rate center in a densely populated urban area, in addition to the cost for leasing space for the equipment. The ISP would be required to install a rack, high density remote access servers, a high capacity router, CSU/DSU, network hubs, backup power, etc.

or more of the major interconnect points or network access points (NAPs) on the Internet.

Depending on the relative geographic service territory that is covered, most ISPs have only a single or very few POPs. However, there are several ISPs that are regional or national in scope, and which have constructed or leased very substantial networks consisting of dozens, and in some cases, hundreds of POPs. These POPs are usually hubbed together and aggregate the ISP's calls. Notwithstanding the number of POPs an ISP offers, to one degree or another, each one is typically configured in a manner close to that explained above.

ISPs that do not want to construct POPs in every calling area in which they desire to provide service can construct part of their network based on a foreign exchange ("FX") model. Under this topology, the ISP orders the same zero mile channelized 24 circuit T1 or 23 circuit PRI ISDN lines from the ILEC. In order to haul the traffic back to a distant POP where the ISPs remote access equipment is located, the ISP must order FX service for the circuits, which is a mileage-based rate service. From the standpoint of the ISP, this can be extremely cost-prohibitive unless the mileage is sufficiently minimal, i.e., less expensive than the cost of establishing an additional POP.

The last type of configuration, and generally one of the most attractive to ISPs is a call-aggregation topology

typically provided by CAPs. Although this topology can be extremely attractive, it has not been widely utilized up to this time due to its limited availability. Several CAPs have constructed networks in major metropolitan areas in the United States which aggregate multiple ILEC rate centers to provide access to ILEC customer access lines. A CAP is able to build its own switching fabric by negotiating interconnection rights with an ILEC, which entitles the CAP to take measured amounts of bandwidth out of ILEC tandems onto its own fiber-optic network. In a sense, the CAP is building a broadband network around the ILEC. However, the CAP must interconnect with the ILEC in order to obtain access to the twisted-pair copper access lines going to the customers served by the ILEC. To date, even ILECs in competition with CAPs do not appear to be offering any type of call aggregation service.

Under this topology, the ISP either co-locates a single POP in the CAP facility or constructs a POP within a zero mile zone of the CAP facility. ISPs obtaining circuits from CAPs which utilize this aggregation feature eliminate the need to build a POP near each rate center, or implement FX service to every rate center. The CAP, which is interconnected to all the ILEC rate centers, aggregates all the ISP's calls switched by those rate centers, and delivers them to a single ISP POP. In a sense, the CAP becomes an intermediate carrier for the ISP's traffic, and terminates

the call to the ISP POP. In areas where ISPs can purchase these services from CAPs, they will typically do so, due to their cost efficiencies, as indicated above. The existence of a CAP call aggregation network alleviates the need for the ISP to construct costly POPs at each rate center or pay mileage-based FX rates to haul calls back to a POP. In addition, the CAPs normally do not charge any installation fees for their services.

Unfortunately, as mentioned above, CAPs currently exist in only the largest urban areas of the U.S., where monopoly local exchange markets are just beginning to open. While both the Telecommunications Act of 1996 ("Act")¹⁰ and the Commission's Interconnection proceeding¹¹ have focused strongly on opening local markets, the policies are far from being fully implemented. To date, most ISPs in the United States have no choice but to deal with ILECs that charge full tariffed rates for the digital T1 local loop and ISDN connections ISPs require in order to bring in local dial-up customers to their POPs in given geographic service areas.

ISPs located in areas where competition exists generally have been able to obtain rates for the local services from CAPs at levels significantly below ILEC

¹⁰ 47 U.S.C. § 251 (1996).

¹¹ Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, Second Report and Order and Memorandum Opinion and Order, CC Docket No. 96-98, FCC 96-333, released August 8, 1996, para. 4-12 ("Second R&O"). The Second R&O is currently on appeal at the U.S. Court of Appeals for the Eighth Circuit.

pricing.¹² However, ISPs located in areas where there is no competition, which is the vast majority of the United States, are captive customers of ILECs. Many ISPs providing service in areas where they have no alternative but to order services from a monopoly ILEC complain of high prices, long delays in installing lines, and poor service quality.¹³ For ISPs that depend on a single ILEC for the provision of their local telecommunications infrastructure, however, they simply do not have a choice and must make do.

In addition to the three typical arrangements explained above, there are some other emerging alternatives to utilizing incumbent ILEC facilities. Some wireless technologies such as MDS and other bands of radio spectrum, including mobile data, are currently being utilized to provide alternative local loop access to the Internet.¹⁴ Last, there are scattered cable company trials around the U.S. where customers can download information from the Internet over the local cable loop, which is connected to the Internet backbone. However, since less than 10% of the cable systems in the United States are ready to upgrade the

¹² For example, in Philadelphia, Pennsylvania a number of large ISPs are utilizing one particularly large CAP for their local telecommunications infrastructure which allows them access to potential customers in the 215 and 610 area codes at a cost per customer far below that charged by ILECs.

¹³ In addition, many ISPs complain that ILECs are bundling Internet service free with the order of second local lines, and in addition are using their monthly customer billing mailings to advertise these offers.

¹⁴ See "Mobile Data Carriers Try to Access the Internet," Radio Communications Reports, Feb. 10, 1997, at 8.

loop to two-way, the cable companies offering these services mainly utilize the ILEC infrastructure to permit customers to upload information to the Internet.¹⁵

IV. The Commission Should Rely Upon the Competitive Marketplace to Shape the Future Development Of Internet Services

USIPA fully agrees with the Commission's tentative conclusion in the Access Charges Reform Proceeding Notice of Proposed Rulemaking relating to the imposition of interstate access charges on ISPs.¹⁶ There the Commission tentatively concluded that the imposition of access charges on ISPs for usage of the local telephone network would be "potentially detrimental" to the "growth of the still-evolving information services industry."¹⁷ As mentioned above, the Commission has followed this policy since 1983, when it initially excluded enhanced service providers from interstate access charges. As a result, ISPs are currently considered end users and subject to intrastate tariffs.¹⁸ No reason exists at this time to modify that policy. The

¹⁵ See "OSS Hopes to Add Cable Stops on the Info Highway," Broadcasting & Cable, March 3, 1997, at 46.

¹⁶ See In re Access Charge Reform, Notice of Proposed Rulemaking, Third Report and Order, CC. Docket No. 96-262, FCC 96-488, released Dec. 24, 1996 ("NPRM").

¹⁷ See *Id.* at para. 288.

¹⁸ See 47 C.F.R. § 69.2 (m) (1996).

Commission should maintain the *status quo*, in accord with the clear policy of the Telecommunications Act of 1996 to promote the development of the Internet and preserve the unfettered competition that currently exists in the ISP industry.¹⁹

If, as argued by some ILECs, ISPs should be paying more to cover the costs of upgrading ILEC switching facilities and tandem trunks,²⁰ this is a question for particular tariff proceedings or contractual negotiation between the specific parties involved. As discussed above, most ISPs purchase digital T1 lines or PRI ISDN from ILECs at tariffed rates, in addition to paying substantial installation charges for the services. ISPs also order from ILECs costly mileage-based FX services for the channelized local T1 or PRI lines in order to terminate calls from distant rate centers to a POP. The fact is that ISPs are purchasing tremendous amounts of bandwidth from ILECs, which is what ILECs are in the business of selling. In fact, the demand for lines is so high, that the average installation time takes about 45 days, and frequently 6-8 months. Adding up all the recurring monthly charges for these services, and the additional installation charges, many ISPs now pay millions of dollars per month for ILEC services. For most

¹⁹ 47 U.S.C. § 230 (b) (2) (1996).

²⁰ See NPRM, para. 286.

ISPs, the bill for ILEC services is their largest recurring monthly expenditure, and in some cases the equivalent of half their revenues.

In addition, ILECs obtain revenues from the sale of a substantial number of second lines to residential customers who desire dedicated lines for their computer modems. One recent study has found that the ILECs revenues in 1995 were \$1.4 billion from orders by customers for second access lines.²¹ A good assumption is that revenues from second line sales were even higher in 1996, as the Internet grew substantially more during that year. It appears that ILECs are experiencing very substantial gains in revenues as a result of both the sale of lines to ISPs, and the sale of second lines to subscribers.

Even assuming these revenues are insufficient to cover the costs of providing the service, this does not mean the imposition of a new charging mechanism is necessary. Quite to the contrary, as ISPs now purchase services directly from ILECs, the current structure is more than adequate to make whatever adjustments may be necessary in particular cases.

Moreover, in this dynamic and rapidly changing arena, there is no basis to conclude that ISPs are paying insufficient charges to ILECs for existing services. Chairman Hundt made this clear in a recent speech, stating

²¹ Lee L. Selwyn & Joseph W. Laszlo, *The Effect of Internet Use on the Nation's Telephone Network*, (prepared for Internet Access Coalition, Jan. 22, 1997).

that the Commission does not "have the data or the good practical ideas that beckon us toward clear decisions on access reform generally."²² The Chairman specifically mentioned that the Commission has no empirical data concerning the "exact costs" to upgrade networks to handle Internet traffic.²³

Furthermore, the emergence of CAPS in local markets completely changes the way the Commission has traditionally analyzed rates. CAPs generally charge lower prices to ISPs and waive installation fees, deriving less revenues than ILECs, and yet, CAPs are investing in, and constructing switched broadband fiber-optic infrastructures around ILEC networks. CAPs have already begun installing broadband wires into businesses in urban areas, and will likely soon begin overbuilding obsolete copper networks operated by ILECs in many areas, completely bypassing the ILECs. The competitive forces being unleashed in some markets are beginning to drive momentum towards the establishment of market-based rates.

It is this growing competitive arena which should be relied upon to set the parameters for the provision of Internet services. The intense competition that is characteristic of today's Internet service provider market,

²² Reed Hundt, Chairman of the Federal Communications Commission, Remarks at "Convergence or Collision: Telecommunications Regulation and the Internet," Berkely, CA, March 7, 1997.

²³ Id.

consisting of over 3,600 ISPs nationwide, should not be stifled by the imposition of artificial regulatory charges unrelated to the actual functioning of the marketplace. As any increase in local exchange infrastructure costs will have a direct effect on Internet access prices,²⁴ the Commission must proceed with great care to ensure that the development of Internet services and technology is not artificially constricted.

There are many potential issues across a broad spectrum that the Internet will touch. With respect to the evolving Internet industry, the Commission must make every effort to maintain a hands-off approach to the maximum extent possible. It should react only to clearly defined issues, and not regulate simply because there might be a problem. The Commission must be careful in moving forward in its oversight of this new industry to frame particularized issues, and investigate them in specific and focused proceedings. Careless evaluations could lead to poor policy

²⁴ The typical ISP charging flat rate pricing around \$15-\$20/customer/month would not be able to provide Internet access service at the quality standard 10 to 1 user to modem/line ratio, which normally ensures no busy signals, if local telco costs were increased. The average local telco costs for ISPs range from about \$4-\$5/customer/month. Tack on a cost of about \$3-\$4/customer/month for a backbone Internet connection, \$1-\$2/customer/month for equipment costs, \$3-\$4/customer/month for technical support and services, \$1-\$2/customer/month in setup costs (i.e., software, documentation, packaging, etc.), \$3-\$4/customer/month for advertising to obtain the customer, and \$.50-\$1/customer/month for miscellaneous costs, and it is reasonable to conclude that currently the typical ISP is operating on razor thin margins. The vast majority of ISPs surely could not withstand a rate increase for local telecommunications infrastructure.

decisions, which could potentially have a very negative impact on the ISP industry as a whole.

This industry has exploded over the past two years and there is one compelling reason for this - government regulation has not slowed it down. ISPs will drive the construction of the broadband telecommunications infrastructure of the future. The ISP industry has proven this over the past two years, as technology is maturing at a pace never before imagined.

The Commission should carefully consider these points each time it makes a decision to inquire about Internet services or proposes a rule which will effect the state of the Internet industry. The USIPA hopes that the Commission will promote the spirit of the Telecommunications Act of 1996 in every action it takes regarding the Internet - and let competition establish the landscape.

V. Interconnection, Resale and Unbundled Network Elements Policies Should be Promptly Implemented to Open up Monopoly Local Markets to Competition

Timely implementation of the local competition provisions contained in the Telecommunications Act of 1996 relating to the opening of bottleneck local telecommunications markets is central to the resolution of the issues of pricing and bandwidth on the Internet. Section 251 of the Act requires ILECs to provide "dialing

parity" and "nondiscriminatory access to telephone numbers, operator services, directory assistance, and directory listings" to CLECs, CAPs and other competitive providers of telecommunications services.²⁵

In this regard, the development of a new telecommunications infrastructure in the United States capable of delivering advanced technologies such as Internet services into homes, schools and businesses is best fostered through the full and prompt implementation of the competitive market objectives of the Telecommunications Act of 1996. Without competition in the local telephone markets, ILECs will have less incentive to upgrade their networks promptly to deliver the new technologies. USIPA wagers that the unleashing of such competitive forces will ultimately provide broadband services at rates far lower than currently exist. Although there is evidence of this trend today, as is discussed above, the Commission need only evaluate the competition that developed in the interexchange market subsequent to the AT&T divestiture. The fact is that competition will determine telecommunications pricing and drive the services that will be made available in the future.

Today, there are CAPs competing head-to-head with ILECs who sell access to customers at the ends of the copper lines they control. The CAPs, in turn, are connecting other new

²⁵ See 47 U.S.C. § 251 (1996); See also Second R&O, para. 4-12.

providers of broadband services such as ISPs to the same ILEC networks, but more efficiently and at substantially lower costs. The solution to the development of broadband networks in the United States can be summed up in one word - competition. Once the Commission facilitates interconnection, competition should develop to a far greater extent in local exchange markets, driving both lower rates and innovation. This is the premise of the Telecommunications Act of 1996.

Of the three different ISP configurations previously outlined, there is a reason that the call aggregation network is the most attractive. The call aggregation topology provides the cheapest, most efficient, and most advanced network available to ISPs for providing the telecommunications services driving the development of the Internet. Of course, this topology comes as a direct result of the existence of competition in the local telecommunications marketplace.

Therefore, the Commission should work to ensure that competitors can get access to the end users connected to ILEC networks at reasonable prices and in a non-discriminatory fashion. If the Commission ensures these interconnection arrangements, ISPs will no longer be captive customers of ILECs, and will have a choice among the best providers for the telecommunications services they purchase. In addition, with competition, the ILECs will likely have a